WE CLAIM:

1. A process for reducing the self-adhesiveness of polytrimethylene terephthalate pellets which comprises:

a) introducing polytrimethylene terephthalate pellets having an intrinsic viscosity of at least about 0.4 dl/g into a conduit containing a liquid which is moving through the conduit, thereby causing the pellets to move through the conduit with the liquid;

b) adjusting the temperature of the pellets and the liquid to a temperature of about 50 to about 95°C for a time sufficient to induce a degree of crystallinity of at least about 35% in the pellets; and

c) separating the pellets from the liquid.

2. The process of claim 1 wherein the liquid is water.

3. The process of claim 1 wherein the temperature is from about 65 to about 95°C.

4. The process of claim 3 wherein the temperature is from about 65 to about 85°C.

5. The process of claim 1 wherein the polytrimethylene terephthalate pellets have an intrinsic viscosity within the range of about 0.4 to about 1.0 dl/g.

6. The process of claim 1 wherein the weight ratio of the liquid to the pellets is from about 5:1 to about 200:1.

7. The process of claim 6 wherein the weight ratio of the liquid to the pellets is from about 10:1 to about 100:1.

8. The process of claim 1 wherein the conduit is a pipe.

9. The process of claim 8 wherein the pipe is made of chlorinated polyvinyl chloride.

10. The process of claim 1 wherein the flow rate of the liquid in the conduit is sufficient to prevent the PTT pellets from settling.

11. The process of claim 10 wherein the liquid to pellet weight ratio is greater than about 6.67:1 and the flow rate, U_M, of the liquid is determined by the following formula:

(Eq.3) $$U_M = 120.4 D_P \left(\frac{d_P}{D_P}\right)^{0.17} \left(\frac{\rho_P - \rho_F}{\rho_F}\right)^{0.5}$$

where U_M is the minimum fluid velocity without pellets settling, D_P is the pipe internal diameter, d_P is the pellet diameter, ρ_P is the pellet density, and ρ_F is the fluid density.

12. The process of claim 1 wherein the conduit is a pipe having a diameter of from about 2 (5.1) to about 10 (25.4) inches (centimeters).

13. The process of claim 12 wherein the conduit is a pipe having a diameter of from about 4 (10.2) to about 6 (15.2) inches (centimeters).

14. The process of claim 1 wherein the polytrimethylene terephthalate pellets are maintained in contact with the liquid for a time within the range of about 3 seconds to about 5 minutes.

15. The process of claim 14 wherein the polytrimethylene terephthalate pellets are maintained in contact with the liquid for a time within the range of about 30 seconds to about 3 minutes.

16. The process of claim 15 wherein the polytrimethylene terephthalate pellets are maintained in contact with the liquid for a time within the range of about 1.5 minutes to about 2 minutes.

17. The process of claim 1 wherein the pellets are contacted with the liquid for a sufficient time to

produce polytrimethylene terephthalate pellets having a glass transition temperature of at least about 55°C.

18. Polytrimethylene terephthalate pellets made by the process of claim 1 which have a differential scanning calorimeter thermogram characterized by the absence of a cold crystallization peak.

19. Polytrimethylene terephthalate pellets made by the process of claim 1 wherein the crystallinity of the pellets is within the range of about 36 to about 45%.

20. Polytrimethylene terephthalate pellets made by the process of claim 1 which have an apparent crystallite size within the range of about 10 to about 13 nm.

21. Polytrimethylene terephthalate pellets made by the process of claim 1 which have a density of at least about 1.33 g/cm^3.

22. The process of claim 1 wherein the pellets are separated from the liquid in a centrifugal dryer.

23. The process of claim 1 wherein the separated pellets are directed to a classifier to remove fines and oversized pellets.

24. The process of claim 23 wherein the separated pellets are cooled below their glass transition temperature.

25. The process of claim 24 wherein the glass transition temperature is at least about 55°C.

26. The process of claim 23 which further comprises:

a) removing pellet fines, dust, and undersizes by passing pellets through a screen in the classifier;

b) passing the pellets through a slice plate section in the classifier where air is flowing through to cool the pellets;

c) passing the pellets through a perforated plate in the classifier that retains oversized pellets; and

d) removing the pellets from the classifier.

27. The process of claim 26 wherein the air for cooling is from a centrifugal blower.

28. A process for classifying and cooling polymer pellets to below their glass transition temperature which comprises:

a) removing pellet fines, dust, and undersizes by passing the pellets through a screen;

b) passing the pellets through a slice plate section where air is flowing through to cool the pellets;

c) passing the pellets through a perforated plate that retains oversized pellets; and

d) removing the pellets.

29. The process of claim 28 wherein the air for cooling is from a centrifugal blower.

30. The process of claim 28 wherein the air for cooling is generated by suction from the classifier.

31. An apparatus for reducing the self-adhesiveness of polymer pellets which comprises:

a) means for introducing polymer pellets into a conduit containing a liquid;

b) means for moving the liquid through the conduit;

c) means for controlling the temperature of the liquid;

d) means for separating the pellets from the liquid;

e) a classifier for removing pellet fines and dust and oversized pellets; and

f) means for recycling the liquid.

32. The apparatus of claim 31 wherein the means of introducing the pellets into the conduit comprises a hopper and an eductor.

33. The apparatus of claim 31 wherein the conduit is a pipe having a diameter of in the range of about 2 (5.1) inches to about 10 (10.2) inches (centimeters).

34. The apparatus of claim 33 wherein the pipe has a diameter in the range of about 4 (10.2) to about 6 (15.2) inches (centimeters).

35. The apparatus of claim 31 wherein the conduit is long enough to afford a residence time sufficient to achieve a crystallinity of about 36 to about 45% in pellets of polytrimethylene terephthalate.

36. The apparatus of claim 31 wherein the means for separating the pellets from the liquid is a centrifugal dryer.

37. The apparatus of claim 31 wherein the classifier further comprises a means for combined classifying and cooling.

38. The apparatus of claim 37 further comprising suction means in the classifier for generating air for cooling.

39. The apparatus of claim 37 further comprising a centrifugal blower which provides the air for cooling.

40. The apparatus of claim 37 which further comprises:

a) a screen for removing pellet fines, dust, and undersizes;

b) a slice plate section in which air flows through to cool the pellets; and

c) a perforated bottom plate that retains oversized pellets.

41. The apparatus of claim 40(a) further comprising that the screen is a 8 mesh 0.025 diameter wire screen made of stainless steel.

42. The apparatus of claim 40(c) further comprising that the bottom plate is a 16-gauge stainless steel perforated plate with 7/32 inch round holes.